

Ancient Monuments Laboratory
Report 136/91

SLAG FROM THE COUNTY SPORTS SITE
(CS 81), STAINES, MIDDLESEX.

Justine Bayley

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Summary

About 2 kg of iron smithing slag was recovered from Roman (1st century) and 20 kg from medieval (mainly late 12th-13th century) contexts. Two separate episodes of metalworking are represented. A few of the medieval slag pieces contained traces of copper alloys.

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The medieval slag was the by-product of iron smithing. The majority of the material was the normal type of fayalite (iron silicate) slag in the form either of amorphous lumps or of hearth bottoms, the larger plano-convex slag masses that collect in the base of a smith's hearth. Smaller amounts of fuel ash slag (with more silica and less iron than fayalite) and vitrified clay hearth lining were also noted. One hearth bottom (from context 475) had hearth lining attached and another fragment of hearth lining (from context 368) probably came from next to the tuyere, where the air blast from the bellows entered the hearth, as part of the perforation appeared to be present. Copper corrosion products, apparently from included metal droplets, were noted on two hearth bottoms and a lump of smithing slag. This suggests that the smith was working small amounts of copper alloys as well as iron. They could have been melted in crucibles in the hearth (though no crucibles were found) but could also have used as platings or inlays, eg makers marks found on knives.

The majority of the slag came from late 12th and 13th century contexts and this is probably the period when the smith was active. Some slag came from later deposits where it may have been residual. The total weight recovered was 20.7 kg.

Nearly 2 kg of Roman slag was found, mainly in 1st century contexts. Like the medieval material, it was the debris from iron smithing but there were more slag lumps and pieces of hearth lining and fewer hearth bottoms than in the later material. A notable find was an almost complete tuyere, a semi-circular plate of hearth lining with the tuyere hole near the straighter upper edge. The slag fragments had a slightly different appearance and came from a different area of the site to the medieval finds, confirming that at least two separate episodes of smithing more than a millenium apart were represented.

At neither period is there any evidence to suggest that smithing was actually carried out in the area excavated, though the presence of hearth lining at both periods suggests that the activity was probably close to the excavated area.

Table 1: Slag samples recovered from medieval contexts

Context	Smith	HB	FAS	HL	Other
188					copper alloy scrap/waste
294	yes				
297		yes			copper alloy scrap/waste
344		yes			
362	yes			yes	
368	yes	yes	yes	yes	copper alloy in slag
375	yes	yes	yes	yes	copper alloy in slag
441		yes			
442		yes			
443		yes			
472	yes				
475	yes	yes		yes	
513		yes			
599	yes				metallic iron fragments
687					? iron object
800	yes				
816					? fired clay (not slag)

Hearth bottom dimensions

(max diameter x min diameter x depth in cm)

297	12 x 9 x 3; 10 x 8 x 2; 9 x 9 x 4
344	20 x 17 x 7; 18 x >12 x 5; 13 x 12 x 4; 10 x 9 x 6; 15 x 13 x 7; 8 x 6 x 3
368	12 x 9 x 4; 10 x 8 x 7; 7 x 6 x 4; 9 x 8 x 3; 11 x 6 x 5
375	5 x 5 x 2; 8 x 6 x 3
441	9 x 7 x 3
443	13 x 8 x 4
475	12 x 10 x 5
513	8 x 7 x 3

Table 2: Slag samples recovered from Roman contexts

Context	Smith	HB	FAS	HL	Notes
766	yes			yes	
796			yes	yes	
904		yes			
917	yes				
952	yes				
966	yes				
969				yes	complete tuyere
974		yes			
979		yes			HB: 11 x 9 x 5 cm
986				yes	
987	yes				
996				yes	
998	yes				

Smith = smithing slag, HB = hearth bottom, FAS = fuel ash slag
HL = hearth lining